

REMARKS

Claims 18 to 23 are currently pending in this application. Claim 18 has been amended.

Rejections Based on Tate

In the Office Action, the Examiner has first found claims 18 and 20 to be anticipated under 35 USC 102(b) in view of Tate (U.S. Patent No. 6,406,088). However, it is noted that this anticipation rejection is positioned under the heading “Claim Rejections - 35 USC § 103”. It is presumed that the heading is incorrect and that the Examiner intended to raise an anticipation rejection instead of an obviousness rejection.

In making the anticipation rejection, the Examiner states that Tate teaches a body with a “generally constant first wall thickness” and “a first end”. In making this statement, the Examiner has taken very specific points along the length of the article described in Tate and has deemed such specific points to comprise the constant wall thickness regions recited in claim 18. However, it is noted that the specific points referred to by the Examiner are discrete locations along the length of the article. It is further noted that Tate very specifically teaches that the wall thickness is not constant: *“Furthermore, as is illustrated in fig. 3, the wall thickness δ of a crash rail 20 tapers linearly from a largest wall thickness δ at the root portion 22 to a smallest wall thickness δ at the tip portion 21”* (Tate, column 2, lines 18 to 21). In addition, Tate also states *“The tapering cross-sectional area of the crash rails 20 and the tapering wall thickness δ help the crash rails 20 to resist bending”* (Tate, column 3, lines 10 to 12). Thus, it is submitted that there is no teaching whatsoever in Tate of a structural member having a constant wall thickness and, moreover, Tate very clearly teaches that a tapered wall thickness is necessarily required.

Claim 18 has been amended in order to replace the term “generally constant” with “constant”. The term “generally” was included in the claims in order to accommodate for typical variations in wall thickness that would be encountered during the manufacturing process. As is known to persons skilled in the art, various degrees of tolerances are acceptable in manufacturing articles. Thus, the removal of the term “generally” from claim 18 will still be understood as

allowing the claim to encompass structural members wherein the wall thicknesses are constant within normal tolerance levels.

In the Office Action, the Examiner, in making the anticipation rejection of claim 18 states that “*Tate fails to disclose that the structural member is metal*”. As the Examiner also indicates, claim 18 specifically requires the structural member in question to be made of metal. On this basis, it is submitted that the Examiner has not met the requirements for raising a rejection under 35 USC 102(b). Specifically, as accepted by the Examiner, Tate fails to teach every element of the claim, which is a necessary requirement for supporting a rejection under 35 USC 102(b). Although Tate indicates that structural members made of metal are known in the art, Tate very specifically teaches away from using such material. In this regard, the Examiner is directed to Tate and, in particular, the paragraph bridging columns 2 and 3. In this section, Tate very specifically states that “*metal crash rails known in the art have a high tendency to buckle on impact, but the crash rails 20 of the present invention are designed **not to buckle**. Instead, during an impact the crash rails 20 gradually **disintegrate** from their tip portions 21 progressing towards the root portions 22 as the resin matrix of each rail 20 detaches from the fibres 25, 26, 27, 28 it encases*” (emphasis added). Thus, although Tate discloses that metal crash rails are indeed known in the art, the reference very clearly teaches that such members have deficiencies and that the crash rails taught by Tate, which are formed from composite materials, are preferred. It is also very specifically taught in Tate that the crash rails disclosed therein are not designed to buckle or deform, but, instead, to disintegrate due to the resin matrix and fibres forming the composite material.

Thus, it is submitted that claim 18, and all claims depending therefrom, stand both novel and non-obvious over Tate.

Rejections Based on Tate and Shohei

In the Office Action, the Examiner has found claims 19 and 21 to be obvious in view of the combination of Tate and Shohei (JP 61074713) under 35 USC 103(a). This rejection is respectfully traversed.

Claims 19 to 21 depend from claim 18. As discussed above, the reference to Tate very specifically teaches away from any structural member incorporating a constant wall thickness and any such member being made of metal. Both these features are contained in claims 18 to 21. The Examiner suggests that Shohei teaches a tapered section having a constant wall thickness and that, on this basis, the references to Tate and Shohei can be combined to result in the present invention. As discussed below, it is respectfully submitted that the Examiner's analysis is not proper.

Firstly, the guidance on assessing obviousness as provided by the Supreme Court in KSR International Co. v. Teleflex Inc. (127 S. Ct. 1727 (2007)) provides that "*a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results*" (Id. At 1739). However, the Court in KSR also supported the Federal Circuit's position that "*rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.*" *In re Kahn*, 441 F.3d 977, 988.

Further, as clearly stated in Section 2142 of the MPEP, "*the rational to support a conclusion that the claim would have been obvious is that all of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods **with no change in the respective functions**, and the combination yielded nothing more than **predictable results** to one of ordinary skill in the art*" (emphasis added).

It is respectfully submitted that the Examiner has not met this requirement for a finding of obviousness under 35 USC 103(a). Specifically, the Examiner first assumes that the tapered section taught by Tate can be replaced by a constant wall thickness section. However, as indicated in the above excerpts from Tate, this reference very clearly teaches away from using a constant wall thickness in favour of a tapered wall. Indeed, such a tapered wall is a specific requirement in Tate due to the structural member being formed of a composite material that must "disintegrate". Thus, the Examiner's proposal to replace the tapered section of Tate with a constant wall section would amount to a complete change in the functionality of the article taught by Tate and the results of such modification could not be reasonably predictable.

As indicated above, Tate very specifically teaches away from using metal in forming the structural member in question. The invention on which the Tate reference is based relies upon the use of a composite material that can disintegrate upon impact. Tate very clearly states that the buckling, or deformation, associated with metal articles should be avoided in favour of the disintegration of the composite material used therein. The Examiner's combination of Tate and Shohei would require the metal component of Shohei to be used in the manner taught in Tate. However, as would be apparent to persons skilled in the art, such a combination cannot be made. In other words, the teaching of Tate would clearly lead a person skilled in the art away from the use of any metal component as taught by Shohei.

Notwithstanding the foregoing, it is also submitted that the Examiner's interpretation of Shohei is incorrect. In this regard, the Examiner states that Shohei teaches a tapered section of a pipe to have a constant wall thickness and refers to figure 2b of such reference. However, figure 2b is merely an illustration of the second stage or step in the process taught by Shohei that includes a number of other steps. As very clearly seen in figure 2b, when the end portion of the tube is reduced in outer diameter, the mandrel (11) is still contained within the tube. Subsequent steps result in the extraction of the mandrel which, in turn, result in the formation of a tapered wall thickness on the end of the tube. The Examiner suggests that the process can be stopped at the stage illustrated in figure 2b. However, for this to occur, some other means of extracting the mandrel must be found. It is respectfully submitted that the Examiner is requiring an extrapolation of the Shohei teaching that is completely beyond the reference in question. If the mandrel is withdrawn in the manner taught by Shohei, the wall thickness is tapered. Assuming even that the mandrel is withdrawn outside of the die, then the outer diameter of the tube will be expanded. In either case, a person skilled in the art could not incorporate the teaching of Shohei into Tate without a considerable amount of inventive ingenuity.

On the above basis, it is submitted that the combination of Tate and Shohei cannot be made as the Examiner would suggest. To make such combination, a number of substantive changes in both function and teaching must be made to both of the Tate and Shohei references. Further, even if some combination of these references can be made, there is clearly no basis on which to predict the ensuing results.

Thus, claims 19 and 21, and all claims depending therefrom, are believed to stand both novel and non-obvious over the references to Tate and Shohei.

Rejections Based on Withers and Shohei

The Examiner has rejected claims 22 and 23 as being obvious in view of the combination of Withers (GB 2007569) and Shohei. This rejection is respectfully traversed.

The reference to Shohei was discussed above. In particular, the Examiner has again relied upon the illustration shown in figure 2b of Shohei to suggest the step of forming a tube having an outer tapered diameter. However, as discussed above, figure 2b is only the second step of a process illustrated in Shohei and that following figure 2b, some step must be required to remove the mandrel. It is submitted that it is not possible to withdraw the mandrel from the tube shown in figure 2b without some tapering of wall thickness occurring or, in the alternative, restoration of the outer diameter of the tube.

The reference to Withers was discussed in the previous response filed on September 30, 2008. However, it is noted that the Examiner has not made any comments with regard to such previous submission. Specifically, as previously submitted, Withers teaches a tube that is provided with a counterbore spaced away from one of the tube openings. For this reason, the outer end of the tube must have a larger outer diameter than the counterbore in order for the tube of Withers to function in the promised manner. The Examiner suggests that the tube taught in Withers can be further modified using figure 2b of Shohei to result in the method recited in claim 22. In particular, the Examiner relies upon Shohei to teach the final step recited in claim 22, namely, the tapering of the outer diameter of the formed article.

Section 2142 of the MPEP was recited above. As clearly stated, any combination of references used in an obviousness rejection must not involve any change in function and must have predictable results to one of ordinary skill in the art. As would be clearly understood by persons skilled in the art, narrowing of the outer diameter of the tube taught by Withers would completely be contradictory to the provision of a counterbore within the tube. That is, the

counterbore of Withers serves to provide a shoulder against which an inserted article will rest. If the outer diameter of the tube is narrowed at the opening as the Examiner suggests, clearly any article inserted therein must, by definition, have a smaller diameter than the counter bore. Thus, the tapering of the outer diameter of Withers would very clearly result in a non-functioning embodiment. Persons skilled in the art will, therefore, understand that no tapering of the outer diameter of the Withers tube will be possible.

Thus, claims 22 and 23, and all claims depending therefrom, are believed to stand both novel and non-obvious over the references to Withers and Shohei.

On the basis of the foregoing, it is respectfully submitted that all claims now pending in the present application are allowable over the references cited by the Examiner.

Respectfully submitted,

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By: /Michael L. Kenaga/
Michael L. Kenaga (Reg. No. 34,639)
Attorney for Applicant
312/551-3060
Customer No. 051500